IN THE CLAIMS:

Claims 1-14 (canceled)

15. (original) A router, comprising:

a physical interface coupled to a first network;

a fabric interface controller coupled to a fabric network;

a fast pattern processor that receives packets of a protocol data unit from said physical interface, performs pattern recognition and classification on said packets and said protocol data unit; and

a routing switch processor that receives said protocol data unit from said fast pattern processor and transmits via said fabric interface controller, said routing switch processor having a virtual segmentation system, including:

a protocol data unit receiver subsystem that receives at least a portion of said protocol data unit and assembles said protocol data unit; and

a virtual segmentation subsystem, associated with said protocol data unit receiver subsystem, that performs virtual segmentation on said protocol data unit.

16. (original) The router as recited in Claim 15 wherein said protocol data unit receiver subsystem further includes:

an assembler subsystem that receives said at least a portion of said protocol data unit and assembles said protocol data unit; and

a transmit queue subsystem that maintains a linked list associated with said protocol data unit, performs a function on said protocol data unit and maintains at least one queue structure for transmission.

17. (original) The router as recited in Claim 16 wherein said assembler subsystem further stores

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said at least a portion of said protocol data unit in at least one block and said transmit queue subsystem further maintains a linked list of said at least one block.

18. (original) The router as recited in Claim 15 wherein said virtual segmentation subsystem further includes a stream editor subsystem that performs said virtual segmentation.

19. (original) The router system as recited in Claim 18 wherein said stream editor subsystem further converts between a first protocol and a second protocol.

20. (original) The router as recited in Claim 18 wherein said stream editor subsystem further generates a validity check selected from the group consisting of:

a cyclic redundancy check (CRC),

a CRC for asynchronous transfer mode (ATM) adaptive layer 5 (AAL5) over ATM, and

a CRC-10 for operation, administration, maintenance (OAM) cells.

21. (original) The router as recited in Claim 15 wherein said protocol data unit receiver subsystem and said virtual segmentation subsystem further process a plurality of interleaved portions of different protocol data units.

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